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EXAMINER

LIANG, REGINA

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/402,751
Filing Date: October 12, 1999
Appellant(s): HENNINGSSEN, HENNING

Daniel F. Drexler
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 8/17/07 appealing from the Office action mailed 8/15/06.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,765,934	Okamori et al	06-1998
5,053,763	Sonehara et al	10-1991
5,548,349	Mizuguchi et al	8-1996

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4,619,508	Shibuya et al	10-1986
5,633,737	Tanaka et al	5-1997
5,281,960	Dwyer, III	1-1994
3,553,364	Lee	1-1971

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. Claims 1, 3, 4, 8, 14, 15, 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamori et al (US. PAT. NO. 5,765,934 hereinafter Okamori) in view of Sonehara et al (US. PAT. NO. 5,053,765 hereinafter Sonehara).

As to claim 1, Fig. 2 of Okamori discloses an illumination unit for point illumination of a medium comprising a plurality of light emitter (216b-216e) comprises of light guides (light-branching guide is formed of a bundle of optical fibers, col. 8, lines 44-52) arranged to illuminate an illumination face (using a projection lens 8 to project the image on a screen 10, the screen 10 is shown in Fig. 7, the screen 10 corresponds to an illumination face) via a light valve arrangement (each of light valves 61-64 corresponds to a light valve arrangement), each of at least two of the light emitters being arranged to illuminate a light valve arrangement (e.g., light guide 216b is arranged to illuminate light valve arrangement 61, light guide 216c is arranged to illuminate light valve arrangement 62). Okamori also teaches using a liquid crystal panel as a light valve arrangement (col. 1, lines 55-62).

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Okamori does not explicitly disclose the light valve arrangement comprising a plurality of electrically controlled light valves.

Sonehara teaches a light guide type display similar to Okamori. Sonehara teaches a light valve arrangement comprising a plurality of electrically controlled light valves (see Figs. 7, 8, an LCD serves as light shutter (light valve arrangement), each light shutter comprising a plurality of electrodes 706 or 806 correspond to a plurality of picture elements, see col. 6, lines 15-25, col. 7, lines 20-28; the plurality of picture elements correspond to a plurality of electrically controlled light valves as claimed). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the light valve arrangement of Okamori to have a plurality of electrically controlled light valves as taught by Sonehara so as to provide an improved light guide type display device which provides a uniform and high quality display (col. 2, lines 25-27 of Sonehara).

As to claim 3, Fig. 2 of Okamori teaches a micro lens (projecting lens 8) arranged between the light valves (61) and the illumination face (10 in Fig. 7).

As to claim 4, Okamori teaches the optical light comprises optical fibres (col. 8, lines 50-51).

As to claim 8, Fig. 2 of Okamori teaches a collimation lens (14d) arranged between the light emitter (216b) and the face shape of the light valves (61).

As to claim 14, Okamori teaches an optical means (projecting lens 8) arranged between the light valve arrangement (61) and the illumination face (10 in Fig. 7) for spreading the light beams across the illumination face.

As to claim 15, Okamori teaches the LCD light valves.

As to claim 18, Okamori teaches light guides are arranged with respect to the light valve arrangement such that the optical energy of each area of light valves does not differ significantly from each other (see Fig. 2).

As to claim 19, Fig. 2 of Okamori teaches light receiving ends of the light guides (216) are gathered in one bundle which directly receives light from a reflector 12 optically connected to the lamp (11).

As to claim 20, not the discussion of claim 1 above.

2. Claims 2, 5, 6, 21, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamori and Sonehara as applied to claims 1 and 20 above, and further in view of Mizuguchi (US. PAT. NO. 5,548,349).

As to claims 2, 21, Okamori as modified by Sonehara does not disclose the illumination unit having one micro lens arranged with respect to each light valve. However, Fig. 2B of Mizuguchi teaches a pixel arrangement of a display device comprising micro lens arrays (e.g., 6), each of micro lenses (6a) constituting the micro lens array has a size equal to one pixel (15) of the LCD panel (14). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the illumination unit of Okamori as modified by Sonehara to have one micro lens arranged with respect to each light valve as taught by Mizuguchi since an excellent picture can be obtained.

As to claim 5, Fig. 1 of Mizuguchi teaches the light source comprising a short arc gap lamp.

As to claim 6, Okamori as modified by Sonehara and Mizuguchi does not disclose the short arc gap lamp comprises light receiving optical light guides arranged with an angle of +/-

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75° with respect to the equatorial axis of the lamp. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the short arc gap lamp of Au as modified by Mizuguchi have light receiving optical light guides arranged as claimed, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

As to claim 22, Fig. 2 of Okamori teaches a micro lens (projecting lens 8) arranged between the light valves (61) and the illumination face (10 in Fig. 7).

3. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okamori and Sonehara as applied to claim 1 above, and further in view of Shibuya et al (US. PAT. NO. 4,619,508 hereinafter Shibuya).

As to claim 7, Okamori as modified by Sonehara does not disclose the light source comprising a laser source. However, Shibuya teaches an illuminating optical device which uses a coherent light source such as a laser (1 in Fig. 1). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the light source of Okamori as modified by Sonehara to have a laser source as taught by Shibuya since the laser light source can accomplish illumination excellent in uniformity (col. 1, lines of Shibuya)..

4. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamori and Sonehara as applied to claim 8 above, and further in view of Tanaka et al (US. PAT. NO. 5,633,737 hereinafter Tanaka).

As to claim 9, Okamori as modified by Sonehara does not disclose face shape of the light valves forms one or more hexagons. Fig. 3c, of 3d of Tanaka teaches the light valves (LCD layer) having hexagonal micro-lenses such that the face shape of the light valves (pixels) forms one or more hexagons. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Okamori as modified by Sonehara to have hexagon shapes formed on the face shape of the light valves since this arrangement make it possible to reduce the angles made between the incident light beams of the respective colors and the optical axis of the micro-lens, thereby reducing the aberration of the micro-lens array.

As to claim 10, Fig. 3 of Tanaka shows that the pixels in the second row are offset from the first row (this corresponds to the light valves being disposed at a given mutual distance, and the rows being mutually offset in the transverse direction).

As to claim 11, Figs. 1a, 2, 4, 7 of Tanaka teaches the projection of all the individual light valves in the display screen.

5. Claims 12, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamori and Sonehara as applied to claim 1 above, and further in view of Dwyer, III (US. PAT. NO. 5,281,960).

As to claim 12, Okamori as modified by Sonehara teaches each of bundles (e.g., 216b) is illuminating the face shape of the light valves (the output end of each bundle e.g., 262 corresponds to the illumination head). Okamori as modified by Sonehara does not disclose the illumination head and the illumination face is adapted to perform a relative movement across an illumination area, and a control unit for controlling the light valves in dependence on the relative

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movement between the illumination head and the illumination face. However, Dwyer, III teaches a display device for generating an image on the display having a plurality of light sources (Fig. 2), the pixels provided by the light sources are imaged on the display upon a fiber optic bundle. Dwyer, III also discloses the device comprising an actuator for controlling the relative movement between the array of light emitting points from the fiber optic bundle and the illumination face, and the actuator relies upon the successive selection of apertures within a light valve cell to pass light from an image source (see Fig. 2, 6, 20, 21, and col. 15, lines 44-49, col. 22, line 66 to col. 23, line 68 for example). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Okamori as modified by Sonehara's illumination unit to perform a relative movement between the illumination head and the illumination face and have a control unit for controlling the light valves as taught by Dwyer, III, since the apparent resolution of the displayed image is increased without increasing the resolution or size of the display source used to generate the image (col. 4, lines 57-60 of Dwyer, III).

As to claim 13, Figs. 12 and 13 of Dwyer, III shows the movement of the light emitting point through a succession of positions (this corresponds to illumination system movable relative to the illumination face in a single progressing movement transverse to a direction).

6. Claims 16, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamori and Sonehara as applied to claim 1 above, and further in view of Lee (US. PAT. NO. 3,553,364).

Okamori as modified by Sonehara does not disclose the light valves comprising electromechanical light valves. Lee teaches a electromechanical light valve device relating to

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light transmission or light reflection control, and more particularly to a light valve for controlling the transmission or the reflection of light by means of an electrostatic charge. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the light valves of Okamori as modified by Sonehara comprising an electromechanical light valves as taught by Lee so as to provide a light valve isolated from surrounding electrostatically generated forces, thereby reducing “crosstalk”. (col. 1, lines 35-36 of Lee).

(10) Response to Argument

Appellant’s remarks regarding Okamori and Sonehara on pages 7-8 are not persuasive. Appellant’s remarks that “Okamori is concerned with a single light emitter directing light to a single light valve. This is entirely different from the provisions of Appellant’s claim 1 which require that each light emitter illuminate a plurality of light valves”, are not persuasive. Okamori is not using a single light emitter directing light to a single light valve, instead, Okamori is using a single light emitter (each light guide of 216b-216e, Fig. 2) directing light to a single **light valve arrangement**. Okamori teaches each light valve is a liquid crystal panel 6 (col. 1, line 58), thus, each light valve (a liquid crystal panel) in Okamori is corresponding to a light valve arrangement as claimed. Sonehara is cited to teach using a liquid crystal panel as a light shutter, Figs. 6 and 7 of Sonehara teaches the details of each liquid crystal panel having a plurality of electrically controlled light valves, each electrode (706, 806) in the liquid crystal panel is a picture element which is corresponding an electrically controlled light valve, thus, each picture element constitutes a single light valve. Since Okamori teaches each light emitter illuminate a light valve arrangement, and Sonehara teaches a display device having a light valve arrangement including a plurality of light valves to provide an improved light guide type display device which provides a

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uniform and high quality display (col. 2, lines 25-27 of Sonehara), therefore, Okamori as modified by Sonehara would have “each light emitter illuminate a plurality of light valves” as claimed in claim 1 to provide a uniform and high quality display as set forth in the final rejection.

Appellant’s remarks regarding Sonehara on 9-11 are not persuasive. Sonehara is relied upon to show that a light shutter (a LCD panel) comprises a plurality of electrical controlled light valves and when Okamori is modified by Sonehara would comprise a light valve arrangement comprising a plurality of electrical controlled light valves that’s illuminated by a single emitter thus rendering the claim obvious. Furthermore, Okamori clearly teaches a plurality of light emitters comprised of light guides as claimed, thus the combination of Okamori and Sonehara renders the claims obvious and the rejection is respectfully submitted to be proper.

Appellant’s remarks regarding claim 20 on pages 11-12 are not persuasive, see the remarks regarding claim 1 above.

In response to applicant's argument on pages 13-14 that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, col. 2, lines 25-27 of Sonehara teaches “to provide a improved light guide type display apparatus which provides a uniform and high quality display” therefore it is

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respectfully submitted that a suggestion or motivation to do so is found in the references themselves.

In response to applicant's argument on page 13 that Sonehara is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Okamori teaches a display apparatus having a light guide and a plurality of optical fibers, and Sonehara is a light guide type display apparatus having a plurality of optical fibers and a light shutter which is similar to Okamori therefore the two references are in the same field of endeavor and are analogous art.


Appellant's remarks on pages 14-15 that all dependent claims are allowable because the independent claims are allowable are not persuasive since the combination of Okamori and Sonehara renders the independent claims 1 and 20 obvious and are not allowable.

(11) Related Proceeding(s) Appendix

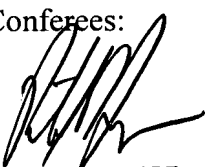
No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,


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